

Dredged Material Research Program



MISCELLANEOUS PAPER D-78-1

A SURVEY OF POTENTIAL MEDICAL AND VETERINARY DISEASES AT HABITAT DEVELOPMENT FIELD SITES

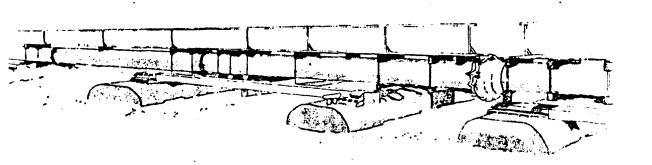
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July 1978 Final Report

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material may increase the incidence	of medical and	Veterinary diseases in the
localities of those habitats. Faun	al field invento	ry information and available
literature were used to identify po	tential relation	ships between habitat asso-
crated animals and communicable dis	seases at habitat	development field sites in
vitalii, lexas, and Oregon. Medic	al and veterinar	v records were used to docu-
ment the actual occurrence of disea	ises at these loc	ations. No vector-borne,

prontact, or environmental diseases were identified from any of the field sites.

¹³ FORM 1473 EPITION OF THOU 65 IS OBSOLETE.



DEPARTMENT OF THE ARMY WATERWAYS EXPERIMENT STATION, CORPS OF ENGINEERS

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IN REPLY REPER TO: WESYV

31 August 1978

SUBJECT: Transmittal of Miscellaneous Paper D-78-1

TO: All Report Recipients

- 1. The Miscellaneous Paper transmitted herewith represents the results of one of the research efforts (work units) of the Corps of Engineers' Dredged Material Research Program (DMRP). This study was conducted by the Habitat Development Project (HDP) of the DMRP. The HDP had as its main objectives the development of wetland and upland habitats on dredged material and the evaluation of the impact of disposal in shallow water and upland sites.
- 2. This report, "A Survey of Potential Medical and Veterinary Diseases at Habitat Davelopment Field Sites" (Work Unit 2AlO), addresses the concern that the establishment of natural habitats on dredged material may increase the incidence of medical or veterinary diseases at those sites. Habitat development sites in Oregon, Texas, and Virginia were evaluated, and it was found that an increase in the incidence of vector-borne, contact, or environmental diseases would not be expected as a result of habitat development activities.
- 3. This work unit is of importance in assessing the overall environmental impact of the habitat development disposal alternative and is one of many research efforts in the HDP with a similar objective. This and related work units will be synthesized in a report entitled "Upland and Wetland Habitat Development with Dredged Material: Ecological Considerations" (2AO8).

JOHN L. CANNON

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Preface

This report constitutes a literature survey of selected potential medical and veterinary diseases at three of the Dredged Material Research Program (DMRP), Habitat Development Project (HDP) field sites: Miller Sands Marsh and Upland Habitat Development Site, Columbia River, Oregon; Bolivar Peninsula Marsh and Upland Habitat Development Site, Galveston Bay, Texas; and Windmill Point Marsh Development Site, James River, Virginia.

The study was conducted as Work Unit 2A10 of the DMRP for the Office, Chief of Engineers, at the U. S. Army Engineer Waterways Experiment Station (WES), Environmental Laboratory (EL), formerly the Environmental Effects Laboratory, Vicksburg, Mississippi.

The report was written by Dr. John W. Simmers, HDP. The study was under the supervision of Dr. Hanley K. Smith, Manager, HDP, and the general supervision of Dr. John Harrison, Chief. EL.

The Directors of WES during the study were COL G. H. Hilt, CE, and COL J. L. Cannon, CE. Technical Director was Mr. F. R. Brown.

Contents

	Page
Preface	2
ist of Tables	4
Introduction	5
Survey Approach	5
Animal populations at the habitat development sites Potential disease problems	6 6 6
Results	6
Survey	6
within tables	7
Bibliography	43

List of Tables

Table		Page
1	Potential Medical and Veterinary Diseases at Miller Sands	10
2	Potential Medical and Veterinary Diseases at Bolivar Peninsula	16
3	Potential Medical and Veterinary Diseases at Windmill Point	41

A SURVEY OF POTENTIAL MEDICAL AND VETERINARY DISEASES AT HABITAT DEVELOPMENT FIELD SITES

Introduction

- 1. The development of marsh and upland habitats from dredged material disposal sites at Bolivar Peninsula, Galveston Bay, Galveston County, Texas; Windmill Point, James River, Prince Georges County, Virginia; and Miller Sands, Columbia River, Clatsop County, Oregon, may affect the localized incidence of selected human and veterinary diseases in these areas. The effect could be an indirect impact of habitat development through the attraction and maintenance of animal populations that serve either as reservoirs or are otherwise involved in the maintenance or transmission of communicable diseases of human or veterinary importance.
- 2. This report represents an effort to distinguish between the possibility for a communicable disease problem related to habitat development and the probability of a problem related to this activity.

Survey Approach

3. This survey was conducted in three phases; the first phase involved the listing of animal species (both fish and wildlife) associated with the particular habitat development sites. The second phase identified known diseases of human or veterinary importance potentially associated with each animal on the list and the role that the animal fills in the transmission of the disease. For example, a red-winged blackbird (Agelaius phoeniceus) can be a reservoir for the virus of western equine encephalitis. If in fact the blackbird were infected with the virus, the disease could be carried to a man or a horse or to other animals by certain species of mosquitoes (Aedes aegypti or various Culex spp.) which first bite the blackbird and then bite the man. As the reader might judge for himself, the variety of possible diseases a man exposes himself

to through association with natural animal communities is surprising and perhaps upsetting but the actual occurrences of these diseases on the local and state level do not approach the potential. The third phase served then to define, for each disease, the actual localized and statewide occurrence of the diseases listed.

Animal populations at the habitat development sites

- 4. The list of fauna presented in this report and used to define potential disease interactions was obtained from the Dredged Material Research Program (DMRP), Habitat Development Project (HDP) files and represents two types of information:
 - a. Listings from baseline field and/or literature faunal inventories for the general locations of proposed habitat development.
 - <u>b</u>. Listings of fish and wildlife species actually observed at the sites during the early phases of site development.
- 5. The faunal listings presented are incomplete for the locations discussed but are suggested as adequate for the purpose of defining the relationships that may cause the transmission of disease from animal to animal or animal to man.

Potential disease problems

6. The potential diseases associated with the listed fish and wildlife were identified from reports of state health organizations of Washington, Texas, and Virginia; publications of the U. S. Center for Disease Control; publications of the U. S. Agricultural Research Service; and a general literature review.

Actual disease occurrences

7. The 4-year period from 1971-1975 was studied to identify the actual incidence of the various diseases in the states and in counties adjacent to the locations of the HDP field sites. The same sources used to obtain potential disease information were used to obtain the actual disease incidence data.

Results

Survey

8. The results of the survey are presented in Tables 1-3 according to column headings that are explained below. Tables are designed

for quick reference by site and obvious animal species. Diseases listed are those that may be influenced by habitat management practices to encourage or discourage site use by specific animals. Although these diseases may have been reported from areas near the HDP field sites, none have been reported specifically from the field sites. Finally in order to make the tabulation less confusing, literature references have been omitted and a list of useful secondary literature is given in the bibliography.

<u>Definitions and explanations</u> of column headings within tables

- 10. The following is an explanation of the headings included in the tables:
 - a. Host -- An abundant animal at the site and one that might maintain a pathogen (bacteria, virus, etc.) by serving as a reservoir for that pathogen. The host animal may also transfer a pathogen to man or to animals of economic importance to man. When the host animal serves the transfer function, it is called a vector. Host animals are usually vertebrates and the most obvious animals at each field site.
 - b. Vector or intermediate host -- Certain diseases are directly communicated from one man or animal to another man or animal but most listed in the tables of this report require another animal to link the reservoir and the susceptible host. This other animal is either a vector or an intermediate host or both.
 - (1) Vector -- A micropredator (a predator that takes only a small bit of nourishment from the prey) that may transfer a pathogen from one susceptible host (reservoir) to another susceptible host. If the pathogen does not further develop or reproduce in the micropredator, then the micropredator is called a vector; if the pathogen develops or reproduces in the micropredator, the micropredator is considered an intermediate host. Usually vectors seek out prey (susceptible hosts) and may transfer pathogens to new host species and new geographical areas.
 - (2) Intermediate host -- As explained above, the intermediate host may be a vector. The intermediate host may also serve a passive role in disease communication. An animal serving as an intermediate host may be eaten by a susceptible host thereby transferring the pathogen to the susceptible host. A waterborne pathogen may undergo development or reproduction in an intermediate host before returning to the water to infect a

susceptible host. Intermediate hosts are most often lower invertebrates: arthropods (usually insects) and mulluscs (snails or bivalvia).

- <u>c.</u> <u>Disease</u> -- May be acute or chronic and generally one of three types: vector-borne diseases, contact diseases, or environmental diseases. For information on most of these diseases, the reader is directed to the Manual of Communicable Diseases, published by the Communicable Disease Center, Atlanta, Georgia.
- d. Role of host in disease -- A host animal may serve one or more roles in the communication of human or veterinary disease.
 - (1) Final susceptible host -- Contains the final development form of the pathogen, usually the infectious form.
 - (2) Host of micropredators -- An animal supporting micropredators that may serve as vectors or intermediate hosts, e.g., an animal serving as a tick host or flea host.
 - (3) Intermediate host -- This role is explained above and refers to a host supporting a developing or reproducing stage of a pathogen.
 - (4) Reservoir host -- An animal that harbors a pathogen at a chronic level and thereby makes the pathogen available to vectors, intermediate hosts, or final hosts.
- e. Pathogen -- A living organism such as a virus, bacteria, protozoa, etc., capable of producing disease in a susceptible host.
- f. Hosts of economic significance -- Hosts including man that are preferred by micropredatory vectors, or who may consume intermediate hosts or who are otherways susceptible to a disease. Included in this list with man are animals associated with man as domestic animals or pets.
- <u>Human infections per year</u> -- The average number of infections reported for 1971-1975 from counties adjacent to the HDP field site.
- h. Average for state -- The average number of human infections reported for 1971-1975 from the entire adjacent state.
- <u>1. Likelihood of occurrence</u> -- An <u>a</u> through <u>d</u> rating of possible occurrence of each disease at each site:
 - (1) <u>a</u> Reported in county or adjacent counties every year 1971-1975.
 - (2) <u>b</u> Reported in the state during 1971-1975, but no cases in counties adjacent to HDP field site.

- (3) c Reservoir, vector, and/or intermediate host species present, but no cases reported in man.
- (4) $\frac{d}{human}$ Veterinary disease predominantly of wildlife, no human cases.
- j. Notes -- A series of notes is appended to each table set to clarify or elaborate on items of special importance.

Table 1 Potential Medical and Veterinary Diseases at Miller Sands

						Human	Average	Likelihoo.
	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Rosts of Economic Significance	Infections per Year	for State	of Occurrence
Oncorhynchus tshawytscha Chinook salmon	None	Bacterial kidney disease	Rost	Corny bacterium sp.	Balmonid fishes	0	ì	ه ا
CHITIOOL SALIBUI		Kidney disease or salmon furculosis		Aeromonas salmonicida	ţ			
		Aeromonas disease		Aeromonas lique- faciens	Salmonid fishes, shad	Ì		
		Columnaria disease	•	Chondrococcus sp.	Salmonid fishes			Ì
		Cold water disease		Cytophagia psychro- philia, C. sp.	\	1		-
	A ₁	Tail rot, fin rot, hemorrhagic septicemia	1	Vibrio sp. (not specific)	Many fishes			
	Manophyletus salmonicola	Canid salmon poisoning	Contains in- termediate host	Neorickettsia helmin- thocea	Dog, carnivores		ļ	
Rattus norvegicus Norvay rat	Culex tarsalis	Western equine encephalitis	Reservoir mos- quito host	Virus	Domestic bird, pas- serine bird, man, killdeer, horse		2	ď
		St. Louis encephalitis		Į.	1		<1	
	Culex pipiens	Western equine encephalitis					5	
		St. Louis encephalitis			. ↓		<1	l l
	Culiseta inornata	Western equine encephalitis	į		Domestic bird, horse, passerine bird, man, killdeer		2	
	Thassus petrolatus	Plague	Flea host reservoir	Yersinia pestis	Man, rodent	1	0	Ė
	Dimanus montanus	Plague		•	ŀ		0	ļ
	Ornathodoros hermai	Relapsing fever	Tick host reservoir	Borellia recurrens	•		<1	Ì
	Dermacentor andersoni	Tick paralysis Colorado tick fever	Tick host	None Virus	Man, rodent, rabbit, dog, cattle, pas- serine bird, deer	ļ	<u><1</u> 5	b
		Anaplasmosis		Anaplasma marginale	mouse, killdeer	Not re- porter	Not re- ported	
		Rocky Mtn. spot- ted fever Rabies		Rickettsia rickettsii Virus	· [ľ	0	b d
		Tularemia		Pasteurella tularensis	Ì		∢1	þ
		Q. fever	•	Coxiella burnetii	•	Ţ	41	ь
				(Continued)				(Sherr

Host	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Houts of Economic Significance	Human Infections per Year	Average for State	Likel Occur
Rattus norvegicus Norvay rat	Dermacentor andersoni (Continued)	Lymphocytic chloriomeningitis	Tick host	Virus	Man, rodent, rabbit, dog, cattle, pas-	Î	0	ů
(Continued)		Western equine encephalitis	Reservoir tick host		mouse, killdeer		2	t
Myocastor coypus Nutris	None	None	ļ	,			None	No:
Peromyscus maniculatus Deer mouse	Dermacentor andersoni	Tick paralysis Colorado tick fever	Tick host	None Virus	Man, Norway rat, cat- tle, rabbit, ro- dent, dog, pas-		<1 5	t t
		Anaplasmosis		Anaplasma marginale	serine bird, killdeer	Not re- ported	Not re- ported 2	c t
		Rocky Mtn. spotted fever Rabies		Rickettsia rickettsii Virus		Ĭ	0	1
		Tularemia Q. fever		Pasteurella tularensis Coxicila burnetii			1	į
		Brucillosus Lymphocytic chloriomeningitis	Virus	Brucilla sp.	1			Ċ
		Western equine encephalitis	Tick host reservoir	Virus	ł		2 <1	į
	Ornathodoros hermai	Relapsing fever		Borrella hermsii	Man, Horway rat, Townsend's vole, rodent, domestic bird, passerine bird, killdeer	.	2	
	Culex tarsalis	Western equine encephalitis	Mosquito host reservoir	Virus	Man, horse, Norway rat, passerine bird, domestic bird, killdeer		,	
	Culex pipiens			!	Man, Norway rat, pas- serine bird, domes- tic bird, killdeer, horse		i	
	Culiseta inornata				Man, horse, Norway rat, passerine bird, domestic bird, killdeer		·	
Branta canadensis	None	Avian botulism	Host	Clostridium sp.	Aquatic bird		1	
Canada goose	Simulii fly	Leucocytozoonosis		Leucocytozoon sp.	Aquatic bird, passer- ine bird			
Anas platyrhynchos	None	Avian botulism	ļ	Clostridium sp.	Aquatic bird	- 1		
Mallard	Simulid fly	Leucocytozoonosis		Leucocytozoon sp.	Aquatic bird, passer- ine bird			
	Ceratopogonid fly	1	•	7	•	Ŧ	7	1

-

Table 1 (Continued)

Host	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelihood of Occurrence N
haradrius voiciferus illdeer	Culex tarsalis	Western equine encephalitis	Mosquito host reservoir	Virus	Man, horse, rodent, passerine bird, domestic bird	Î	2	<u> </u>
		St. Louis encephalitis					<1	
	Culex pipiens	Western equine encephalitis					2	
		St. Louis encephalitis					<1	
	Culiseta incrnata	Western equine encephalitis	ł	 			2	
	Dermacentor andersoni	Tick paralysis Colorado tick fever	Tick host	None Virus	Man, Norway rat, cattle, rabbit,		<1 5	ļ
		Anaplasmosis		Anaplasma marginale	rodent, dog, pas- erine bird	Not re- ported	Not re- ported	c
		Rocky Mtn. spotted fever Rabies		Rickettsia rickettsii Virus		Î	0	b d
		Tularemia		Pasteurella tularensis		1	<1	ъ 1
		Q. fever Brucillosus Lymphocytic	† Virus	Coxiella burnetii Brucilla sp.				-
		chloriomeningitis Western equine	Tick host	Virus	ļ		0 2	e b
•	Ornathodoros hermsi	encephalitis Relapsing fever	reservoir	Borrella hermsii	Man, Norway rat,		<1	ĺ
					Townsend's vole, rodent, domestic bird, passerine bird			:
orvus brachyrhynchos	Haemaphysalis leporis-palustris	Rocky Mtn. spotted fever	Tick host	Rickettsia rickettsii	Man, domestic bird, passerine bird		2	
		Q. fever Tularemia		Coxiella brunetii Pasteurella tularensis		l l	<1	
		California encephalitis		Virus			0	ė
	•	Rickettsia disease		Rickettsia canada	1		0	c .
		Western equine encephalitis	Tick host, mosquito host reservoir	Virus	Man, passerine bird	Ì	2	ъ
	Culex tarsalis		Mosquito host reservoir		Man, horse, Horway rat, passerine bird, domestic bird, killdeer		2	ъ
			(00	ontinued)				(Sheet 3 of

Table 1 (Continued)

Host	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelihood of Occurrence
Corvus brachyrhynchos Common crow (Continued)	Culex pipiens	Western equine encephalitis	Mosquito host reservoir	Virus	Man, Norway rat, pas- serine bird, domes- tic bird, killdeer, horse	0	2	b
	Culiseta inornata				Man, horse, Norway rat, passerine bird, domestic bird, killdeer			
	Simulid fly ?	Avian trypano- somiasis	Host	Trypanosoma sp.	Passerine bird, aquatic bird		° I	1
Turdus migratorius	Ceratopogonid fly Simulid fly	Leucocytozoonosis		Leucocytozoon sp.				
Robin		Avian trypano- somiasis		Trypanosoma avium	Passerine bird, domestic bird			
		+	į į	Trypanosoma sp.	Passerine bird ?		1	
	Mosquito sp. ?	Filariasis	Host ?	Microfilaria sp.	Bird ?		ļ	1
	Ceratopogonid fly	Leucocytozoonosis	Host	Leucocytozoon sp.	Aquatic bird, passer- ine bird			
	Haemaphysalis leporis-palustris	Rocky Mtn. spotted fever	Tick host	Rickettsia rick- ettsii	Passerine bird, do- mestic bird, man,		2	b
		Q. fever Tularemia		Coxiella burnetii Pasteurella tularensis	rabbit		<1 <1	1
		California encephalitis		Virus			0	c
		Rickettsia disease Western equine encephalitis		<u>Rickettsia</u> <u>canada</u> Virus	ļ		5	c b
	· Ornathodoros hermsi	Relapsing fever	Tick host reservoir	Borrella hermsii	Man, Norway rat, Townsend's vole, rodent, domestic bird, passerine bird, killdeer		<1	
	Culex tarsalis	Western equine encephalitis	Mosquito host reservoir	Virus	Man, horse, Norway rat, passerine bird, domestic bird, killdeer		2	

Table 1 (Concluded)

Rost	Vector or Intermediate Host	Disense	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelihood of Occurrence	<u>N</u> c
urdus migratorius obin (Continued)	Culex pipiens	Western equine encephalitis	Mosquito host reservoir	Virus	Man, Norway rat, passerine bird, domestic bird, killdeer, horse	Î	2	b	
	Culiseta inornata				Man, horse, Norway rat, passerine bird, domestic bird, killdeer	•	2	b	

Table 1: Notes, Miller Sands

- These diseases are related to water temperature; water temperature should not be increased.
- 2. A rickettsial disease carried by a fluke in a fish.
- An average of seven cases per year of rabies in wild animals occurs in the state.
- 4. There are no significant medical or veterninary diseases currently known to be related to nutria.
- 5. Avian botulism can be exceptionally harmful to populations of waterfowl during periods of drought.
- 6. Leucocytozoonosis may be fatal to immature waterfowl.
- 7. Undoubtedly there are many infected birds. This is a common disease, but only occasionally reported.

Table 2
Potential Medical and Veterinary Diseases at Bolivar Peninsula

flost	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelihood of Occurrence
Dasypus novemeinetus Armadillo	Amblyomma americanum	Tularemia	Tick host	Pasteurella tula- rensis	Man, cattle, swine, sheep, horse,	1	12	۵
		Rocky Mtn. spotted fever		Rickettsia rickettsii	cat, goat, rabbit, chicken	2	18	a
		Q. fever Tick paralysis	į.	Coxiella burnetii None	ł	o 1	Î	c
	Tristoma protracta T. rubida T. grastacckeri T. beidemanni T. longipes T. sangulauge T. megista Rhodinus prolirus Reduviius personatus Melanolestes picipes Panstrongylus megis- tus grutryus sp. Ornatiodoros turicata	Chagas' disease	Tick host, bug host reservoir	Schizotrypanum cruzi	Man, cotton rat, house mouse, opos- sum, goat, cattle, dog, cat, swine, horse, raccoon			
	None	Leprosy	Host reservoir?	Mycobacterium leprae	Man	3	24	a
Procyon lotor Raccoon	Triatoma protracta T. rubida T. gratackeri T. derakeri T. heidemanni T. longites T. sanguisuga T. megista Rhodinus prolixus Reduviius personatus Melanolestes picipes Panatrongulus megistus Erutyrus ép. Ornathodoros turicata	Chagas' diseass	Tick host, bug host reservoir	Schizotryponum cruzi	Man, cotton rat, house mouse, opos- sum, goat, cattle, dog, cat, svine, horse, armadillo		c	c
	Amblyomma maculatum	Leptospirosis Rickettsin-like fever	Tick host	Leptospira pomona Rickettsia sp.	Man, dog, cat, horse, cattle, goat, sheep	0	5 0	R. C
	Permancentor Yariabilis	Rocky Mtn. spotted fever		Rickettsia rickettsii	Man, dog, cattle, horse, cat, swine,	2	18	
		Tularemia		Pasteurella tula- rensis	house mouse, cotton rat, rabbit, pas-	1	12	a
		Anaplasmosis		Anaplasma marginale	serine bird	ç	0	c
		Colorado tick fever Tick paralysis		Virus Rone	1	ļ	0	đ
		St. Louis encephalitis	ł	Virus	7	7	8	6

(Sher-

(Continued)

Table 2 (Continued)

Host	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelin of Occurren
Procyon lotor	Ixodes scapularis	Tularemia	Tick host	Pasteurella tula- rensis	Man, rabbit, dog, cattle	1	12	•
Raccoon (Continued)		Anaplasmosis	Tick host	Anaplasma marginale	•	0	0	c
Mus musculus	Tenebrionid	Tapeworm infection	Definitive	Hymenolepis nana	Man	Not re-	- 1	1
House mouse	beetles	1	host and	1	1	ported		- [
nouse mouse	Notopsullus fasciatus		reservoir		•	į.		
	Xenorsylla cheopis		T .	· · · · · · · · · · · · · · · · · · ·	·	!	1	
	None	Toxoplasmosis	Reservoir,	Toxoplasma gondii	Man, rodent, domestic animals	0	Ŧ	•
	Amblyomma americanum	Tularemia	Tick host	Pasteurella tulu- rensis	Man, rabbit, cattle, sheep, swine,	1	12	
		Rocky Mtn. spotted fever		Rickettsia rickettsii	horse, cat, goat, chicken	2	18	•
		Q-fever	1	Coxiella burnetii	1	o o	Q	۶
		Tick paralysis	Ţ	None	¥	1	1	1
	Dermacentor	Tick paralysis	Tick host	None	Man, dog, cattle,	Ţ	Ţ	Ţ
	<u>variabilis</u>	Rocky Mtn. spotted fever		Rickettsia rickettsii	horse, cat, swine, cotton rat	2	18	a
		St. Louis encephalitis		Virus		7	8	8
		Tularemia		Pasteurella tula- rensis		10		
		Anaplasmosis	1	Anaplasma marginale	į.	0	0	c
		Colorado tick fever	Ţ	Virus	•	1	0	c
	Ornithodoros bacoti	Endemic typhus (Texas strain)	Tick host reservoir	Rickettsia sp.	Man, cotton rat	ł	20	b I
		Rickettsial pox		Rickettsia akari			1	
	Allodermanyssus sanguineus	Rickettsial pox	Mite host reservoir	Rickettsia akari	Man	İ		ŀ
	Triatoma protracta	Chagas' disease	Reservoir	Schizotrypanum cruzi	Man, dog, cat, swine,		i i	1
	T. rubida	1	1	1	horse, goat, opos-	1	- 1	
	T. gerstaeckeri	1	Į.	l l	sum, raccoon, cat-	i		l l
	T. heidemarni		1	1	· tle, cotton rat,	1		- 1
	T. longipes		j	į.	armadillo			
	T. sanguisuga		1		ł	1	l	- 1
	T. megista		1	1	1		- 1	1
	Rhodinus prolixus				1		1	
•	Reduviius personatus	Į.			l l	1		- 1
	Melanolestes picipes Panstrongylus megis-	i		į	1		- 1	1
	tus	ĺ	- 1	1	I		1	1
	Erutyrus sp.	4		1	4	i	1	
	Ornathodoros turicata	1	l	Ŧ	7	i	Ţ	,
	Acies acgypti	Western equine		Virus	Man, horse, house		<1	b
	HEAD, BOILDEY.	encephalitis			mouse, cotton rat, domestic bird, pas- serine bird			

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Table 2 (Continued)

Host	Vector or Intermediate Host	: (arase	Role of Host in Discase	Pathogen	Hosts of Economic Significance	Human Infections per Year	for State	
Mus musculus House mouse (Continued)	Aedes sollicitans	Fastern equine enceptalitis	Reservoir	Virus	Man, horse, house mouse, cotton rat, iomestic bird, pas- serine biri	Î	1	١
	Culex pipiens	Western elliste encestalit. Eastern equine encephalitis St. Louis encephalitis				7	8	
	Culex tarsalis	Western equine encephalitic St. Louis encephalitis				O 7	<1 8	
Sigmodon hispidus Cotton rat	Antlycome emericanum	Rocky Min. spotted rever Q. fever Tularemia		Rickettsia rickettsii Coxiella burnetii Pasteurelia tula-	Man, cattle, swine, log, cat, sheet, horse, goat, rabe bit, house mouse	2 0 1	10 0 12	4
		Tick paralysis	þ	renals None	į.	0	0	
	Ami lyomma maculatum	Lepotospirosis Bickettsis-like Tever	Tick host	teptospira gomona Pickettaia ep.?	Man. for, cat, horse, cattle, sheep, rac- coon, cotton rat	2 0 1	5 0 1	1
	Orrithodoros talje	Relapsing fever Q. fever		Borella neotrogicus Coxiella turnetii	Man, opossum, Norway rat, black rat, norse, swine, lattle			
	<u>Dermacentor</u> <u>variatilis</u>	Tick paralysis Rocky Mtn. spotted fever		None Pickettsia rickettsii	Man. dog. cattle. horse, cat, swine, house mouse	2	79	•
		Colorado tick fever Tularemia	Ì	Virus <u>Parteurella tula-</u>	í	0	0 12	21
		St. Louis		Virus		7	8	.,
		encephalitis Anaplasmosis		Anniinima marginale	•	0	0	
	Ix des dentatus	Rocky Mtn. spotted		Rickettsia pickettsii	Man, Norway rat, rab- bit, chicken	2	18	
		Tularemia	ļ	Pesteurella tula- rensis		1	12	
	Harmaphysalis eporis-palustris	Rocky Mtn. spotted	ļ	Rickettsia rickettsii	Pinck rat, swamp rate	2	18	,
		Q. fever Tularemia	İ	Coxiella burnetii	iomestic tiri	ე 1	0 12	
		Western equine		Pasteurella tula- refuls Yirus		0	41	
		encephalitis California		Ï	ļ	n	0	

Table 2 (Continued)

Host	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Like!!!. f Occurr
Gigmodon hispidus Cotton rat (Continued)	Harmaphysalis leporis-palustris (Continued)	Rickettsia disease		Rickettsia canada		٥		
(00111111111111111111111111111111111111	Ixodes scapularis	Tularemia	Tick host	Pasteurella tula-	Man, dog, cattle,	1	12	n
		Anaplasmosis Relapsing fever Q. fever		rensis Anaplasma marginale Borelia neotropicus Coxiella burnetii	Horway rat	Î	0	
	Omithodoros bacoti	Endemic typhus (Texas strain) Rickettsial pox	Tick host reservoir	Rickettsia sp.	Man, house mouse		0	,
	Actes segrpt1	Western equine encephalitis	Reservoir	Virus	Man, horse, house mouse, cotton rat, domestic bird, pas- serine bird	!		
	Aeies sollicitans	Eastern equine encephalitis			Ì	ŀ		
	Culex pipiens	Western equine encernalition Eastern equino encernalition						
		St. Louis encephalitis				7	8	*1
	Culex tersalis	Western equine encephalitis St. Louis				o 7	∢1 8	
		encephalitis		•	•			
Sylvilagus equaticus	Amplyomma americanum	Rocky Mtn. spotted fever	- 1	Rickettsia rickettiii	Man, cattle, dog, cat, swine, sheep,	2	18	
Swamp rabbit		Tularenia		Pasteurella tula- rensis	horse, goat, rab- bit, house mouse	1	12	•
		Q. fever Tick paralysis	į.	Coxiella burnetii		0	0	
	He-maphysalis leporis-palustris	Rocky Mtn. spotted	Tick host	Rickettain rickettail	Black rat, cotton rat, passerine	2	18	'n
		Q. fever Tularemia	Reservoir	Coxiella burnetii Pasteurella tula-	bird, domestic bird	0 1	12	н.
		Western equine	L	rensis Virus		o o	<1	:
		encephalitis California encephalitis	Tick host				o	
	Aeies sollicitans	Eastern equine encephalitis	Reservoir		Man, cotton rat, pas- serine bird, domes- tic bird, opossum, goat		*1	,
Capra hiracus	Argas persious	Avian spiro- chaetes	Tick host	Spirochaeta sp.	Man, duck, chicken, pigeon	••	••	+
Cost		で自体をしを思		(Continued)	h: Maou			.50

Table 2 (Continued)

	Vector or Intermediate Host	Disense	Pole of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelihoo of Occurrence
Capra hiracus Goat (Continued)	Argas persicus (Continued)	Fowl cholera Fowl paralysis Anthrax Fowl relapsing fever	Tick host	Pasteurella avicida None Bacillis anthracis Borella sp.	Man, duck, chicken, pigeon	 Î	 	d d
		Human relapsing fever		Borella neotropicus			ŧ	ł
		Endemic typhus Yellow fever Tetanus Western equine encephalitis		Rickettsia Charon euagatus Clostridium tetanii Virus		7 0	20 0 11 <1	e e h
	Amblyomma americanum	Tularemia		Pasteurella tula- rensis	Man, cattle, sheep, cat, horse, swine,	1	12	
		Rocky Mtn. spotted fever		Rickettsia rickettsii	chicken, rabbit, armadillo, house	2	18	•
		Q. fever Tick paralysis		Coxiella burnetii None	mouse, cotton rat	0	0 0	e C
	Amblyomma maculatum	Leptospirosis Rickettsia-like fever		<u>Rickettsia</u> sp.	Man, dog, cat, horse, cattle, sheep, rac- coon, cotton rat	2 0	í	Î
<u>Dermac</u>	<u>Dermacentor</u> <u>andersoni</u>	Tick paralysis Colorado tick fever Anaplasmosis Rocky Mtn. spotted		None Virus Anarlasma marginale Rickettsia rickettsii	Man, rabbit, cattle, rodent	2	18	1
		fever Rabies Tularemia		Virus Pasteurella tula- rensis		0	<1 12	6
		Rickettsia di- sportica infection		Rickettsia draportica		Î	0	e
		Q. fever Western equine encephalitic Brucilosis	Reservoir	Virus bracilla sp.		12	0 <1	e b
		Lymphocytic chio- riomeningitis	ł		+	Î	0	1**
	Aedes sollicitans	Eastern equine encephalitis	Reservoir	Yirus	Man, passerine bird, horse		~1	
	Triatoma protracta 1. rulida 1. gratacheri 1. gratacheri 2. hellemanni 2. korginga 2. serjuluga 2. serjuluga 3. serjuluga 4. korginuga 4. korginuga 5. serjuluga 6. korginuga	Chagas' disease		Schizotryjanum cruzi	Man, cotton rat, opossum, raccoon, armadillo, cattle, swine, dog, cat, horse, house mouse			
				(Continued)			·	(3)

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Table 2 (Continued)

Host	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelihood of Occurrence
Capra hiracus Coat (Continued)	Melanolestes picipes Panstrongylus megis- tus Erutyrus sp. Ornithodoros turicata	Chagas' disease	Reservoir	Schizotrypanum cruzi	Man, cotton rat, opossum, raccoon, armadillo, cattle, swine, dog, cat, horse, house mouse	Ö	0	c
Anhinga anhinga Anhinga	Argas persicus	Avian spirochaets Fowl cholera Fowl paralysis Anthrax Fowl relapsing fever Human relapsing fever Endemic typhus (Texas strain) Plague Brucillosus Yellow fever Tetanus Weåtern equine encephalitis	Tick host	Spirochaeta sp. Pasteurella avicida None Bacillus anthracis Borellia neotropicus Rickettsia sp. Yersinia pestis Brucilla sp. Charon evagatus Clostridium tetani Virus	Man, goat, domestic bird, barn swallow	<1 0 7 0	20 10 23 0 11 <1	
Charadrius vociferus Killdeer	Amblyomma maculatum	Leptospirosis Rickettsim-like fever		<u>Rickettsia</u> sp.	Man, dog, cat, horse, cattle, sheep, goat, raccoon, cot- ton rat, passerine bird	0	5	â. c
	Aedes acgypti Aedes sollicitans	Western equine encephalitis Eastern equine	Reservoir	Virus	Man, horse, house mouse, cotton rat, domestic bird, pas- serine bird		<1	Þ
	Culex pipiens	encephalitis Western equine encephalitis Eastern equine encephalitis St. Louis encephalitis				7	8	•
	<u>Culex</u> tarsalis	Western equine encephalitis St. Louis encephalitis				o 7	<1 8	b R

Table 2 (Continued)

Rost	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	for State	Decurrer
Coccyrus americanus Yellow-billed cuckoo (Continued)	Aedes solliditans	Eastern equine encephalitis	Reservoir	Virus	Man, horse, house mouse, cotton ration domestic bird, pas- serine bird	Î	41	
	Culex piptens	Western equine encephalitis Eastern equine encephalitis						
	1	St. Louis encephalitis				7	5	A
	Culex tarsalis	Western equine encephalitis St. Louis				o 7	<1 8	:
Misrchus crinitus	Amblyomma americanum	encephalitis Rocky Mtn. spotted	Tick host	Plabate d misbate at t	V	2	18	1
Sreat created fly- catcher	Auto I fortuna auto I cartun	fever Tularemia	lick nost	Rickettui, rickettsii Pasteurella tula-	swine, horse, cet, rabbit, cotton rat,	1	12	
		O. fever Tick paralysis		Coxiella burnetii None	house mouse, arma- dillo, domestic bird, wild bird	° 1	Î	
Hirundo rustica Barn swallow	Argas persicus	Avian spirochaetes Fowl cnolera Fowl paralysis Anthrax Fowl relapsing		Spirochaeta sp. Pasteurella avicida None Bacillus anthracis Boriella sp.	Man, goat, mourning dove, domestic bird			į
		fever Human relapsing fever		Boriella neotropicus			-	
•		Endemic typhus (Texas strain)		Rickettsia sp.			20	•
		Plague Yellow fever		Yersinia pestis Charon evagatus		†	0	
		Tetanus Western equine encephalitis		Clostridium tetani Virus		?	11 <1	1
•	Ixodes brunneus	Fowl paralysis		None	Passerine bird	0	0	:
Corvus brachyrynchos	Amblyomma americanum	Rocky Mtn. spotted fever		Rickettsia rickettsii	Man, cattle, sheep, horse, swine, cot-	2	18	*
(10m)		Tularemia		Pasteurella tula- rensis	ton rat, opossum, armadillo, house	1	12	9
		Q. fever Tick paralysis	i	Coxiella brunetii	mouse, raccoon,	Ŷ	0	
		Western equine encephalitis	Reservoir	None Virus	passerine bird	•	<1	
		St. Louis encephalitis			\	7	8	*4
	Aedes segypti	Western equine encephalitis		ļ	Man, horse, house mouse, cotton rat, domestic bird, pas-	0	<1	t
				(Continued)	serine bird			5,700

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Table 2 (Continued)

Host	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelihood of Occurrence
Mimus polyglottos	Amblyomma americanum	Rocky Mth. spotted	Tick host	Rickettsia rickettsii	Man, cattle, sheep, horse, swine, cot-	2	18	R
Mockingbird (Continued)		Tularemia	Ì	Pasteurella tula- rensis	ton rat, opossum, armadillo, house	1	12	a
		Q. fever Tick paralysis	}	Coxiella burnetii	mouse, raccoon, pas- serine bird	0 0	0	e e
	Amblyomma maculatum	Leptospirosus Rickettmia-like fever		Rickettsia sp.	Man, passerine bird, dog, cat, cattle, horse, goat, sheep, rabbit, raccoon, cotton rat	2 5	B. C	
	Haemarhysalis leporis-palustris	Rocky Mtn. spotted fever		Rickettsia rickettsii	black rat, domestic	2	18	a.
		Q. fever Tularemia	1	Coxiella burnetii Pasteurella tula- rensis	bird, passerine bird	0	12	a
		Western equine encephalitis	Reservoir 1	Virus		0	<1	Ъ
		California encephalitis Rickettsia canada disease		Rickettsia canada			Î	c
Toxostoma rufum	Culicid fly	Avian maleria	Host	Plasmodium sp.	Passerine bird	1		d.
Brown thrasher	Similia fly	Hee oproteus in- lection		Haemoproteus sp.	1	1	- 1	
	Simulid fly	Leucocytozoonosis		Leucocytozoon sp.	1	1		{
	Culicia fly	Tileriesis	•	Microfilaria sp.	ı			†
	Acdes segypti	Western equine encephalitis	Reservoir	Virus	Man, horse, house mouse, cotton rat, domestic bird, pas- serine bird		4	Ì
	Aedes sollicitans	Eastern equine encephalitis					İ	ļ
	Culex pipiens	Western equine encephalitis Eastern equine encephalitis St. Louis encephalitis						
	<u>Culex pipiens</u> <u>Acdes sollicitans</u>	St. Louis encephalitis	•	ł	Man, house mouse, cotton rat, passèr- ine bird, domestic bird	7 /	8	٩

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Table 2 (Continued)

Nost	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelihood of Occurrence
xostoma rufum	Amblyomma americanum	Rocky Mtn. spotted	Tick host	Rickettsia rickettsii		2	18	4
cown thrasher (Continued)		fever Tularemia		Pasteurella tula- rensis	sheep, horse, swine, cat, goat, house mouse, cotton	1	12	a
		Q. fever Tick paralysis		None burnetii	rat, armadillo, raccoon, domestic bird	0	0	¢
	Amblyomma maculatum	Leptospirosis Rickettsia-like fever		Leptospira pomona Rickettsia sp.	Man, dog, cat, horse, cattle, goat, sheep, raccoon, cotton rat, pas- serine bird	9	5	e.
	Ixodes brunneus	Wild bird paralysis	1	None	Passerine bird	0	0	đ
	Ixodes dentatus	Rocky Mtn. spotted fever	1	Rickettsia rickettsii	Man, rabbit, Norway rat, cotton rat,	2	18	
		Tularemia	1	Pasteurella tula- rensis	passerine bird	1	12	
	Haemaphysalis leporis-palustris	Rocky Mtn. spotted fever		Rickettsia rickettsii	Rabbit, cotton rat, cat, domestic bird,	2	18	
	200000000000000000000000000000000000000	Tularemia	1	Pasteurella tula- rensis	passerine bird	1	12	
		Q, fever Rickettsia canada disease Western equine encephalitis California encephalitis		Coxielia burnetii Rickettsia canada Virus			٥	c
Curdus migratorius	Simulid fly	Leucocytozoonosis	Host	Leucocytozoon sp.	Passerine bird	1		4
Pobin	1	Trypanosomiasis	ł	Trypanosoma avum	Ì	1		
	Simulid fly	Raemoproteum in- fection		Haemoproteus sp.				
	Culicid fly	Filariasis	}	Microfileria sp.	•			
	Anopheles quad- rimaculatus	Avian malaria	}	Plasmodium retic- ulatum	Passerine bird, mourning dove			
	Culex pipiens C. tarsalis		ł	l l		1		
	Aedes segrpti	Western equine encephalitis	Reservoir	Virus	Man, horse, house mouse, cotton rat, domestic bird, pas- serine bird		∢1	ħ
	Aedes sollicitans	Eastern equine encephalitis	↓	+		ł	12 0	t

Table 2 (Continued)

Rost	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelihoo: of Occurrence
Turdus migratorius	Culex pipiens	Western equine	Reservoir	Virus	Man, horse, house	.0	<1	ъ
Robin (Continued)		encephalitis Eastern equine encephalitis			mouse, cotton rat, domestic bird, pas- serine bird	0	<1	ь
		St. Louis encephalitis			1	7	8	•
	Culex tarsalis	Western equine encephalitis				0	<1	ъ
		St. Louis encephalitis	•		.	7	8	
	Ixodes brunneus	Wild bird paralysis	Tick host	None	Passerine bird	0	0	đ
	Haemaphysalis leporis-palustris	Rocky Mtn. spotted fever		Rickettsia rickettsii	Rabbit, cotton rat, cat, domestic bird,	2	18	
		Q. fever Tularemia		Coxiella burnetii Pasteurella tula-	passerine bird	0 1	12	c 8
		Rickettsia canada	ļ	rensis Rickettsia canada		0	0	c
		Western equine	Reservoir	Virus		l	<1	t
		encephalitis California encephalitis			1		0	c
Polioptila caerules	Haemaphysalis	Rocky Mtn. spotted	Tick host	Rickettsia rickettsii		2	18	a
Blue-gray gnatcatcher	leporis-palustris	fever Q. fever Tularemia		Coxiella burnetii Pasteurella tula-		0 1	0 12	e n
		Rickettsia canada	ļ	rensis Rickettsia canada		0	0	c
		disease Western equine	Reservoir	Virus			<1	ъ
		encephalitis California encephalitis		-			0	c
	Aedes segypti	Western equine encephalitis			Man, horse, house mouse, cotton rat,	}	<1 1	b l
			1		domestic bird, pas- serine bird	ł	l	ļ
	Aedes sollicitans	Eastern equine encephalitis			1			
	Culex pipiens Western equine encephalitis	İ						
		Eastern equine encephalitis				•	•	†
		St. Louis encephalitis		ļ	•	7	8	a

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Table 2 (Continued)

Host	Vector or Intermediate Nost	Disease	Role of Host in Disease	Pathogen	Rosts of Economic Significance	Human Infections per Year	Average for State	Likeline of Occurren
Polioptila caerulea Blue-gray gnatcatcher	Culex tarsalis	Western equine encephalitis St. Louis	Reservoir	Virus	Man, horse, house mouse, cotton rat,	0	<1	
(Continued)		encephalitis	•	•	domestic bird, pas- serine bird	7	8	н
Regulus calendula	Ixodes brunneus	Wild bird paralysis	Tick host	None	Passerine bird	0	۵	1
Ruby-crowned kinglet	Aedes aegypti	Western equine encephalitis	Reservoir	Virus	Man, horse, house mouse, cotton rat, domestic bird, pas- serine bird		41	Ì
	Aedes sollicitans	Eastern equine encephalitis						
	Culex pipiens	Western equine encephalitis Eastern equine encephalitis						
		St. Louis encephalitis	Ì		i	7	8	2
	Culex tarsalis	Western equine encephalitis			ļ	o	<1	
		St. Louis encephalitis	+	i	•	7	8 ,	н
Anthus spinoletta	Ixodes brunneus	Wild bird paralysis	Tick host	None	Passerine bird	0	0	1
Water pipit	Aedes sollicitans	Eastern equine encephalitis	Reservoir	Virus	Man, horse, house mouse, cotton rat, domestic bird, pas- serine bird		4	
	Culex pipiens	Western equine encephalitis Eastern equine encephalitis						
*•		St. Louis encephalitis				7	8	
	Culex tarsalis	Western equine encephalitis				0	<1	ŧ
		St. Louis encephalitis		+	\	7	8	î
Lanius ludovicianus Loggerhead shrike	Amblyomma americanum	Rocky Mtn. spotted fever		Rickettsia rickettsii	Man, cattle, dog, sheep, horse,	2	18	
		Tularemia		Pasteurella tula- rensis	swine, cat, goat, house mouse, cot-	1	12	+
		Q. fever	•	Coxiella burnetii	ton rat, armadillo,	0	0	29
		Tick paralysis	•	None	raccoon, domestic bird, passerine bird	0	0	•

Table 2 (Continued)

Host	Vector or Intermediate Host	Disease	Role of Host	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelihood of Occurrence
Lanius ludovicienus Loggerhead shrike (Continued)	Amblyomma maculatum	Leptospirosis Rickettsis-like fever	Tick host	Leptospira pomona Rickettsia sp.	Man, dog, cat, horse, cattle, goat, sheep, raccoon, cotton rat, passer- ine bird	9	5	c
	Remaphysalis leporis-palustris	Rocky Mtn. spotted fever		Rickettsia rickettsii	cat, domestic bird,	2	18 0	A
		Q. fever Tularemia		Coxiella burnetii Pasteurella tula- rensis	passerine bird	0 1	12	c B
		Rickettsia canada discase		Rickettela canada		0 1	0	c
		Western equine encephalitis California encephalitis		Virum			<1 0	b c
	Aedes segrpti	Western equine encephalitis	Reservoir		Man, horse, house mouse, cotton rat, domestic bird, pas- serine bird		ا	b
	Aedes sollicitans	Eastern equine encephalitis				}		}
	Culex pipiens	Western equine encephalitis Eastern equine encephalitis St. Louis encephalitis				7	8	•
	Culex tarsalis	Western equine encephalitis St. Louis				0 7	<1 8	b n
Seiurus motacilla	Amblyomma americanum	encephalitis Rocky Mtn. spotted fever	Tick host	Rickettsia rickettsii	Man, cattle, dog, sheep, horse,	2	18	1
Louisiana waterthrush		Tularenia		Pasteurella tula- rensis	swine, cat, goat, house mouse, cotton	1	12	+
		Q. fever Tick paralysis		Coxiella burnetii None	rat, armadillo, raccoon, domestic bird, passerine bird	Î	Î	e e
	Ixodes brunneus	Wild bird paralysis		None	Passerine bird	1	1.	đ
	Haemaphysalis leporis-palustris	Rocky Mtn. spotted fever		Rickettsia rickettsii	Rabbit, cotton rat, cat, domestic bird,		18	•
•		Q. fever Tularemia	f	Coxiella burnetii Pasteurella tula-	passerine bird	0 1,	12	c 8
		Rickettsia canada disease		Fickettsia canada	ļ	0	0	c

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Table : (Continued)

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Rost	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelihood of Occurrence
Seiurus motacilla	Haemaphysalis	Western equine	Reservoir	Virus	Rabbit, cotton rat,	0	<1	ь
Louisiana waterthrush (Continued)	leporis-palustris (Continued)	encephalitis California encephalitis	1		cat, domestic bird, passerine bird	ĺ	0	c
	Aedes segrpt1	Western equine encephalitis			Man, horse, house mouse, cotton rat, domestic bird, pas- serine bird	:	4	b
	Aedes sollicitans	Eastern equine encephalitis					ł	
	Culex pipiens	Western equine encephalitis Eastern equine encephalitis		Ì		•		
		St. Louis encephalitis				7	8	a .
	Culex tarsalis	Western equine encephalitis		1	ļ	0	41	ь
		St. Louis encephalitis	}	•	•	7	8	Ì
Sturnella magna	Amblyomma americanum	Rocky Mtn. spotted fever		Rickettsia rickettsii	Man, cattle, dog, sheep, horse,	2	18	
Eastern meadowlark		Tularemia		Pasteurella tula- rensis	swine, cat, goat, house mouse, cotton	1	12	1
•		Q. fever Tick paralysis		Coxiella burnetii Mone	rat, armadillo, raccoon, domestic bird, passerine bird	0	0	c c
	Amblyomma maculatum	Leptospirosis Rickettsia-like fever	Tick host	Leptospira pomona Rickettsia sp.	Man, dog, cat, horse, cattle, goat, sheep, raccoon, cotton rat, passer- ine bird	0	5	a c
	<u>Haemaphyealis</u> <u>leporis-palustris</u>	Rocky Mtn. spotted fever		Rickettsia rickettsii	cat, domestic bird,		18	۵
		Q. fover Tularenia	1	Coxiella burnetii Pasteurella tula- rensis	passerine bird	0 1	0 12	c •
		Rist-to la canada		Rickettsia canada		0	0	c
		- 1-ir - 100	1	Virus		}	<1	ъ
		Charies encephalitis	+	•	ļ		0	c
	Culex pipiene	Avies melerie	Host	Plasmodium hexamerium	Passerine bird	Ì	0	đ
	Aedes segrati	Western equine encephalitis	Reservoir	Virus	Man, horse, house mouse, cotton rat, domestic bird, pas-		<1	ь
				(Continued)	serine bird	•		(Sheet .

Table 2 (Continued)

Rost	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelihood of Occurrence
Sturnella magna Eastern meadowlark (Continued)	Aedes sollicitans	Eastern equine encephalitis	Reservoir	Virus	Man, horse, house mouse, cotton rat, domestic bird, pas- serine bird	Î	١	b
	Culex pipiens	Western equine encephalitis Eastern equine encephalitis St. Louis encephalitis				7		
	Culex tarsalis	Western equine encephalitis St. Louis				o 7	<1 8	b a
Agelaius phoeniceus	Amblyomma americanum	encephalitis Rocky Mtn. spotted fever		Rickettsia rickettsii	Man, cattle, dog, sheep, horse,	5	38	8.
Ped-winged blackbird		Q. fever Tularemia	1	Coxiella burnetii Pasteurella tula- rensis	awine, cat, goat, house mouse, cotton rat, armadillo.	10	12	â
		Tick paralysis		Fone	raccoon, domestic bird, passerine bird	0	0	c
	Amblyomma maculatum	Leptospirosis Rickettsis-like fever	Tick host	Leptospira pomona Rickettsia sp.	Man, dog, cat, horse, cattle, goat, sheep, raccoon, cotton rat, passer- ine bird	0	5 0	c
	Haemaphysalis leporis-palustris	Rocky Mtn. spotted		Pickettsia rickettsii	Rabbit, cotton rat, cat. domestic bird,	2	18	•
	<u> </u>	Q. fever Tularemia	1	Coxiella burnetii Pasteurella tula- rensis	passerine bird	0 1	0 12	c B
		Rickettsia canada	į,	Rickettsia canada		0 1	O	c
		Western equine encephalitis	Reservoir	Virus 			41	ъ
		California encephalitis		1	1	1	0	c
	Dermacentor	Tick paralysis	Tick host	None	Man, dog, cattle,	1	0 18	c
	variabilis	Rocky Mtm. spotted fever	Ì	Rickettsia rickettsii	horse, cat, house mouse, cotton rat,	2		•
		Tularenia	1	Pasteurella tula-	raccoon, opossum, cowbird	1 0	12	8
		Anaplasmosis Colorado tick fever		Anaplasma marginale Virus	i	0	o.	
		St. Louis encephalitis		1	ł	7	8	٨

Table 2 (Continued)

Host	Vector or Intermediate Host	Discuse	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelihoo of Occurren
Agelaius phoeniceus Red-winged blackbird (Continued)	Aedes aegypt1	Western equine encephalitis	Reservoir	Virus	Man, horse, house mouse, cotton rat, domestic bird, pas- serine bird	Î	a 	
	Aedes sollicitans	Eastern equine encephalitis			1			
	Culex pipiens	Western equine encephalitis Eastern equine encephalitis St. Louis encephalitis				7	6	
	Culex tarsalis	Western equine encephalitis St. Louis encephalitis				o 7	<1 8	b a
	Culex pipiens	Avian malaria	Host	Plasmodium relictum P. cathemerium P. elongatum P. hexamerium F. sp.	Passerine bird	Î	Ô	d
	Simulid fly .	Haemoproteus infection	ł	Haemoproteus sp.			l l	
	Simulid fly	Leucocytozoonosis	l l	Leucocytozoon sp.			l	1
	Simulid fly	Trypanosomiasis	1	Trypanosoma avium		Ī	4	1
	Mosquito	<u>Filarfasis</u>	•	Microfilaria sp.	7	1	Ŧ	Ţ
Quiscelus quiscula Common grackle	Amblyomma maculatum	Leptospirosis Rickettsia-like fever	Tick .ost	Leptospira pomona	Man, dog, cat, horse, cattle, goat, sheep, raccoon, cotton rat, pas- serine bird	0	5	e e
	Ixodes brunneus	Wild bird paralysis		None	Passerine bird	0	0	4
	Ixodes dentatus	Rocky Mtn. spotted		Rickettsia rickettsii		2	18	•
		Tularemia		Pasteurella tula- rensis	domestic bird, rab- bit, Norway rat, cotton rat	1	12	
	Haemaphysalis leptris-palustris	Rocky Mtn. spotted fever		Rickettsia rickettsii	cat, domestic bird,	2	18	7
		Q. fever Tularesia	l	Coxiella burnetii Pasteurella tula-	passerine bird	0	0 12	c •
		California	Reservoir	rensis Virus		0	0	į.
		encephalitis Western equine encephalitis		+		0	41	ħ

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Table 2 (Continued)

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Host	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelihood of Occurrence
Quiscalus quiscula	Acdes acgypti	Western equine	Reservoir	Virus	Man, horse, house	0	<1	ь
Common grackle (Continued)		encephalitis			mouse, cotton rat, domestic bird, pas- serine bird	ŀ		
	Aedes sollicitans	Eastern equine encephalitis					Ì	
	<u>Culex pipiens</u>	Western equine encephalitis Eastern equine encephalitis St. Louis encephalitis				7	8	a .
	<u>Culex</u> tarsalis	Western equine encephalitis St. Louis encephalitis				o 7	<1 8	a .
	<u>Culex pipiens</u> Other mosquitoes	Avien melarie	Host	Plasmodium relictum P. cathmerium P. elongatum Plasmodium sp.	Passerine bird	Ŷ	Î	a
	Simulid fly	Haemoproteus infection		Haemoproteus sp.			Ì	
	Simulid fly	Leucocytozoonosis	İ	Leucocytozoon sp.			- 1	· [
•	Simulid fly	Avian trypano- somiasis		Trypanosoma avium	1			
	Mosquito	Filariasis	į į	Microfilaria sp.	ì	•	†	•
Molothrus ater Brown-headed cowbird	Amblyomma maculatum	Leptospirosis Rickettsia-like fever	Tick host	Leptospira pomona Rickettsia sp.	Man, dog, horse, cat- tle, goat, sheep, raccoon, cotton rat, passerine bird	2	5 0	a c
	<u>Permacentor</u> variabilis	Tick paralysis Rocky Mtn. spotted		None <u>Fickettsia rickettsii</u>	Man, dog, cattle, horse, cat, swine,	0	0 18	c A
		fever Tularemia		Pasteurella tula- rensis	house mouse, cotton rat, raccoon, opos- sum, red-winged	1	12	a
		Anaplasmosis	i i	Anaplasma marginale	blackbird	0	0	^
		Colorado tick fever St. Louis encephalitis	Reservoir	Virus		0 7	8	3 0.
	Haemaphysalis leporis-palustris	Rocky Mtn. spotted fever	Tick host	Rickettsia rickettsii	Rabbit, cotton rat, cat, domestic bird,	2	18	a
		Q. fever Tularemia	1	Coxiella burnetii Pasteurella tula- rensis	passerine bird		0 12	e a
		California encephalitis	Reservoir	Virus Virus		0	0	c
		Western equine encephalitis	•	(Continued)	•	0	< 1	b (Sheer

Table 2 (Continued)

Nost	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelihood of Occurrence	
Molothrus ater Brown-headed cowbird (Continued)	Aedes segypti	Western equine encephalitis	Reservoir	Virus	Man, horse, house mouse, cotton rat, domestic bird, pas- serine bird	اُ	4		
	Aedes sollicitans	Eastern equine encephalitis							
	Culex pipiens	Western equine encephalitis Eastern equine encephalitis St. Louis encephalitis				7	8	4	
	<u>Culex tarsalis</u>	Western equine encephalitis St, Louis encephalitis				o 7	<1 8	, b	
	Culex pipiens other mosquitoes	Avian malaria		Plasmodium relictum P. circumflexum P. hexamerium F. sp.	Passerine bird	Ô	Î		
	Simulid fly	Haemoproteus infection	Host	Haemoproteus sp.	}	}	1	}	
	Simulid fly	Leucocytozoonosis	1	Leucocytozoon sp.	İ		ļ	1	
	Simulid fly	Avian trypano- somiasis		Trypanosoma avium				}	
Guiraca caerules	Simulid fly	Avian trypano-		Trypanosoma avium	†	1	ŧ	†	
Blue grosbeak	Amblyomma americanum	Rocky Mtn. spotted	Tick host	Rickettsia rickettsii	Man, cattle, dog, sheep, horse,	2	18	a	
	•	Q. fever		Coxiella burnetii	swine, cat, cotton rat, house mouse, goat	0	0	c	
		Tick paralysis Tularemia		None Pasteurella tula- rensis	Raccoon, armadillo, domestic bird, pas- serine bird	0	12	c 6.	
Passerculus sandwichensis	Haemaphysalis leporis-palustris	Rocky Mtn. spotted fever	1	Rickettsia rickettsii	Rabbit, cotton rat, cat, domestic bird,	2	18		
Savannah sparrow		Q. fever	l l	Coxiella burnetii	passerine bird	0	0 12	Ċ.	
		Tularemia	ŧ	Pasteurella tula- rensis		1	12	•	
		California encephalitis	Reservoir 	Virus		0	0	c	
		ft. Louis encephalitis			1	7	8	B	
	Ardes segopti	Western equine encephalitis	ţ	•	Man, horse, house mouse, cotton rat, domestic bird, pas-	o	<1	ъ	
				(Continued)	serine bird			(Shee	

Table 2 (Continued)

	Yector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	of
Passerculus sandwichensis Savannah sparrow	Aedes sollicitans	Eastern equine encephalitis	Reservoir	Virus	Man, horse, house mouse, cotton rat, domestic bird, pas- serine bird		4	b
{Continued}	Culex pipiens	Western equine encephalitis Eastern equine encephalitis St. Louis encephalitis				7	8	
	Culex tarsalis	Western equine encephalitis St. Louis encephalitis			ŀ	0 7	<1. , 8	a b
Anmodramus savannarum Grasshopper sparrow	Amblyomma americanum	Rocky Mtn. spotted fever Q. fever Tick paralysis Tularemia	Tick host	Rickettsia rickettsii Coxiella burnetii None Pasteurella tula- rensis	Man, cattle, swine, sheep, horse, cat, gost, rabbit, chicken	0 0 1	0 0 12	ч с с а
	Amblyomma maculatum	Leptospirosis Rickettsia-like fever	ļ	Leptospira pomona Rickettsia sp.	Man, dog, horse, cat- tle, goat, sheep, raccoon, cotton rat, passerine bird	2	5	e.
	Haemaphysalis leporis-palustris	Rocky Mtn. spotted fever Q. fever Tularemia		Rickettsia rickettsii Coxiella burnetii Pasteurella tula- rensis	Rabbit, cotton rat, cat, domestic bird, passerine bird	2 0 1	18 0 12	c a
		California encephalitis Western equine encephalitis	Reservoir	Virus		Ů	0 {]	e I
	Acdes segreti	Western equino encephalitis			Man, horse, house mouse, cotton rat, domestic bird, pas- serine bird			
	Aedes sollicitans	Eastern equine encephalitis		Ì	ľ			
	Culex pipiens	Western equine encephalitis Eastern equine encephalitis St. Louis encephalitis				7	8	
	Culex tarsalis	Western equine encephalitis St. Louis encephalitis	ļ	(Continued)		0 7	<1 8	t A (Sheer

Table 2 (Continued)

Host	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelihood of Occurrence
Pooecetes gramineus	Dermacentor andersoni	Tick paralysis Colorado tick fever	Tick host	None Virus	Man, rabbit, dog,	0	0	c •
Vesper spairow		Anaplasmosis	1	virus Anaplasma marginale	goat, cattle, pas- serine bird, cotton	•		•
•		Rocky Mtn. spotted fever		Rickettsia rickettsii	rat, house rat	ž	18	
		Rabies	ł	Virus		0	<1	c
		Tularemia	ľ	Pasteurella tula- rensis		1	12	8.
		Rickettsia diapor- tica infection	1	Rickettsia diaportica		0	0	c
		Q. fever	l	Coxiella burnetii	,	0	0	c
		Brucillosus Lymphocytic-		Brucilla sp. Virus	ļ	<1 0	23	p
		chloriomeningitis	1	VI FUS	ļ	ĭ	v	c
		Western equine encephalitis	ļ	ł	ļ	- }	41	ď
	Aedes negypti	Western equine	Reservoir		Man, horse, house	Į.		1
		encephalitis	1	l	mouse, cotton rat,		1	ì
				Į.	domestic bird, pas- serine bird	1	1	
				l	serine bird	1	- 1	1
<u>o</u>	Aedes sollicitans	Eastern equine encephalitis			1	1	ſ	[
	Culex pipiens	Western equine	l l	Ĭ		- 1	1	
		encephalitis		1		1	1	1
		Eastern equine encephalitis	l l	1		1	1	7
		St. Louis encephalitis	İ	1		7	8	8.
	Culex tarsalis	Western equine encephalitis			ļ	0	<1	t
		St. Louis		l		7	8	
•		encephalitis	1	7	1	•		1
Spizella passerinea Chipping sparrow	Amblyorma americanum	Rocky Mtn. spotted fever	Tick host	Rickettsia rickettsii	Man, cattle, swine, sheep, horse, cat,	2	18	
chipping sparrow		Tularemia		Pasteurella tula-	goat, rabbit,	1	12	1
		Tick paralysis	ļ	rensis None	chicken	0	0	c
	Amblyomma maculatum	Leptospirosis	ľ	Leptospira pomona	Man, dog, horse, cat-	2	5	6.
		Rickettsia-like fever	1	Rickettsia sp.	tle, goat, sheep,	0	0	c
			į.		raccoon, cotton rat, passerine bird			
	Mosquito sp?	Filariasis	Host.	Microfilaria sp.	Passerine bird	}	- 1	4
	Ixodes brunneus	Wild bird paralysis	Tick host	None			ì	ì
Spizella pusilla	Ixodes brunneus							1
Field sparrow			į.	Ţ	1	•		•

(Sheet ...

Table 2 (Continued)

Host	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Likelie of Occurre
Spizella pusilla	Ixodes dentatus	Rocky Mtn. spotted	Tick host	Rickettsia rickettsii	Man, rabbit, Norway	2	18	'n
Field sparrow (Continued)		fever Tularemia		Pasteurella tularensis	rat. passerine bird, cotton rat	1	12	ļ
	Haemaphysalis leporis-palustris	Rocky Min. Chottes Seven		Pickettsia rickettsii	Pabbit, cotton rot, cat. domestic bird.	2	18	-
	reports-partiet is	Q. fever		'oxicila burnetii	passerine bird	0	ŋ	
		Tularemia		rencis	·	1	12	٩
		California encephalitis		Virus	Ì	0	0	
		Western equine	Reservoir	į.	[í	<1	
		encephalitis	ļ		•	1	1	- 1
	Aedem megypti	Western equine encephalitis			Man, horse, house mouse, cotton rat, domestic bird, pas- serine bird			
	Aedes sollicitans	Eastern equine encephalitis		1		ļ		}
	Culex pipiens	Western equine encephalitis Eastern equine encephalitis						
		St. Louis encephalitis			ļ	7	8	n
	Culex tarsalis	Western equine	1			0	41	+
		encephalitis St. Louis encephalitis				7	9	*
	Mosquito?	Filariasis	Host	Microfilaria sp.	Passerine bird	0	U	
Melospiza georgiana	Ixodes brunneus	Wild bird paralysis	Tick host	None		0	0	
Swamp sparrow	Ixodes dentatus	Rocky Min. spotted	1	Rickettsia rickettsii	Man, rabbit, Norway rat, passerine	2	18	ì
		Tularemia		Pasteurella fularensis	bird, cotton rat	1	12	
	<u>Haemaphysalis</u> leporis-palustris	Rocky Mtn. spotted fever		Rickettsia rickettsii	Rabbit, cotton rat, cat. domestic bird.	1 2	18	1
		Q, fever		Coxiella burnetii	passerine bird	0	0	
	•	Tularomia		Pasteurella tula- rensis		1	12	**
		California encephalitis		Virus		0	n	
		Western equine encephalitis	1	ļ	1	0	<1	

Table 2 (Continued)

Nost	Vector or Intermediate Host	Disease	Role of Host in Disease	Pathogen	Hosts of Economic Significance	Human Infections per Year	Average for State	Dikeli:
Melospiza georgiana Swamp sparrow (Continued)	Ixodes <u>scapularis</u>	Tularemia Anaplasmosis	Tick host	Pasteurella tula- rensis Anaplasma marginale	Man, dog, cattle, Norway rat, rac- econ, opossum, rab- bit, cotton rat, skink	ů	0	c
•	Aedes aegypti	Western equine encephalitis	Reservoir	Virus	Man, horse, house mouse, cotton rat, domestic bird, pas- serine bird		1	t.
	Aedes sollicitans	Eastern equine encephalitis				Ì	1	
	Culex pipiens	Western equine encephalitis Eastern equine encephalitis St. Louis encephalitis				7	6	
	Culex tarsalis	Western equine encephalitir St. louis encephalitir				o 7	<1 8	ì
Melospiza melodia	Ixodes dentatus	Rocky Mtn. spotted fever Tularesia	Tick host	Rickettsia rickettsii Pasteurella tularensis	Man, rabbit, Norway rat, passerine bird, cotton rat	2 1	15 12	
	Haemaphysalis leporis-palustris	Rocky Mtn. spotted		Rickettsia rickettsii	Rabbit, cotton rat, cat, domestic bird,	2	15	· ·
		Q. fever Tularenia		Coxiella burnetti Pasteurella tula- rensis	passerine bird	5 1	0 12	n
		California encephalitis Western equine encephalitis		Virus		O U	0	e t-
Pumpees sp.	Ixodes scapularis	Tularenia		Pasteurella tula- rensis	Man, dog, cattle. Norway rat, rac=	1	12	•
Skink		Anaplasmosis	İ	Anaplarma marginale	coon, opes um, rab- bit, cottca rat, skink	·	Î	Ĩ
Ornate box tortoise	Ornathodoros turicata			Borella recurrens B. turricata	Man. horse, swine, cattle, rabbit	· ·	18	
		Rocky Mtn. spotted fever Leptospirosis		Rickettsis rickettsii Leptospira pomona		2	5	Ì
		Tularenia Rabies		Pesteurella tuia- rensis Virus	1	0	12	J

Table 2: Notes, Bolivar Peninsula

- 1. Nearby Brazoria County, Texas, has been the only recent site of tick surveillance.
- 2. Chagas' disease or American trypanosomiasis is a potential threat. All the vectors and reservoir hosts are present, but human cases are rare in the U. S.
- 3. Leprosy incidence has dropped from 34 in 1972 to 17 in 1975. Involvement of armadillo is not well defined at this time.
- 4. A high proportion of reported cases occurred in counties adjacent to the HDP field site.
- 5. Thirty-three St. Louis encephalitis cases were reported in Harris County in 1975. Only Jefferson County, Texas, participated in the 1976 surveillance program. Harrison and Jefferson Counties are near the Bolivar Peninsula.
- 6. This disease is usually not reported by health organizations.
- 7. Plague has not been reported in the 1971-1975 period, but was reported in the 1900-1970 period.
- 8. No reports by county are available.
- 9. A total of 330 veterinary ravies cases have been reported per year statewide.
- 10. A. fever has not been reported from this area, but vectors are present.
- 11. Local food poisoning reports and salmonellosis reports are not available. Packaging and transport of food moves contaminated material out of the immediate area of contamination.

Table 3
Potential Medical and Veterinary Diseases at Windmill Point

macentor ariabilis	Western equine encephalitis Eastern equine encephalitis 8t. Louis encephalitis Rocky Mtn. spotted fever Tularemia Anaplasmosis Colorado tick fever Tick paralysis	Reservoir Tick host	Panteurella tularensis Angulama marginale	Man, horse, domestic bird, passerine bird, rodent Man, dog, rabbit, ro- dent, passerine bird	₹1	0 <1 <1 77 0	
maphyealis	fever Tularemia Anaplasmosis Colorado tick fever	Tick host	Pasteurella tularensis	dent, passerine	<1 9	77 0	
	Anaplasmosis Colorado tick fever		tularensis	bira	Y		
		l.			ļ	1	
		I	Coxiella burnetii None	·	Not re- ported	Not re- ported	
eporis-paluntris	Rocky Mtn. spotted		Rickettsia rickettsii	Man, rabbit, rodent, passerine bird	41	77	
	Tularemia		· Pasteurella tularensis	•	0	. 0	
lyomma maculatum	Rocky Mtn. spotted fever		Rickettsia rickettsii	Man, rabbit, dog, ro- dent, passerine bird	41	77	
ex <u>pipiens</u>	Western equine	Reservoir	Virus -	Man, horse, domestic bird, passerine	Î	0	
	Eastern equine - encephalitis			bird, rodent	1	<1	
	St. Louis encephalitis	•	. 🛊	· •		_	
, '	Avian malaria	Host	Plasmodium reticulatum P. cathemerium P. elongatum P. heymerium	Passerine bird		0	
lyomma americanum		Tick host	<u> </u>		41	77	
	Tularemia		Pasteurella	1	0	0	
	Tick paralysis		Rone	↓	Hot re⇒ ported	Not re- ported	
des dentatus	Rocky Mtn. spotted	1	Rickettsin rickettsii		<1	77	
	Tularemia		Pasteurella tularensis	+	0	0	
<u>e</u>	young america.us	fever Western equine encephalitis Pastern equine encephalitis St. Louis encephalitis Avian malaria Rocky Mtn. spotted fever Tularesia Tick paralysis les dentatus Rocky Mtn. spotted fever	fever Sever Sever Sever Sever	yomma maculatum Rocky Mtn. spotted fever Western equine encephalitis Eastern equine encephalitis St. Louis encephalitis Avian malaria Rocky Mtn. spotted fever Tularemia Tick paralysis Rocky Mtn. spotted fever Tularemia Rocky Mtn. spotted fever Tularemia Rocky Mtn. spotted fever Tularemia Rocky Mtn. spotted fever Tularemia Rocky Mtn. spotted fever Tularemia Rocky Mtn. spotted fever Tularemia Rocky Mtn. spotted fever Tularemia Rocky Mtn. spotted fever Tularemia Rocky Mtn. spotted fever Tularemia Rocky Mtn. spotted fever Tularemia Pasteurella Rickettsia rickettsii Pasteurella Pasteurella Pasteurella Pasteurella	Section Rocky Mtn. spotted fever Reservoir Rickettsia rickettsii Man, rabbit, dog, rodent, passerine bird	Rocky Mtn. spotted fever Reservoir Rickettsia rickettsii Man, rabbit, dog, rodent, passerine bird bird bird, passerine bird, passerine bird, passerine bird, passerine bird, passerine bird, rodent passerine bird, rodent passerine bird, rodent passerine bird, rodent passerine bird, rodent passerine bird, rodent passerine bird, rodent passerine bird, rodent passerine bird p	Note Note

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Table 3: Notes, Windmill Point

- 1. <u>Dermacentor variabilis</u> has been implicated as vector of Rocky Mountain spotted fever in Virginia.
- 2. The year 1975 was the first time arthropod-borne encephalitis was reported in Virginia. In 1975 there were two cases of eastern equine encephalitis and one St. Louis strain. In 1976 there were three cases of St. Louis encephalitis in and around Richmond. This may represent an emerging zoonosis. The dense populations of passerine birds may require management.
- 3. Colorodo tick fever was previously isolated on the east coast at Long Island, New York.
- 4. <u>Dermacentor variabilis</u> was confirmed as the cause of tick paralysis in Virginia in 1948.
- 5. Rocky Mountain spotted fever transmission by <u>Ixodes denatatus</u> was confirmed in Prince George County, Virginia, in 1952.

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Simmers, John W

A survey of potential medical and veterinary diseases at habitat development field sites / by John W. Simmers. Vicksburg, Miss.: U. S. Waterways Experiment Station; Springfield, Va.: available from National Technical Information Service, 1978.

44 p.; 27 cm. (Miscellaneous paper - U. S. Army Engineer Waterways Experiment Station; D-78-1)

Prepared for Office, Chief of Engineers, U. S. Army, Washington, D. C., under DMRP Work Unit No. 2A10.
Bibliography: p. 43-44.

1. Disease vectors. 2. Dredged material. 3. Habitat improvement. 4. Habitats. 5. Marshes. 6. Waste disposal sites.

I. United States. Army. Corps of Engineers. II. Series: United States. Waterways Experiment Station, Vicksburg, Miss. Miscellaneous paper; D-78-1.

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